

WHAT IS CLAIMED IS:

1. A nitride-based semiconductor element comprising:  
a plurality of mask layers formed at a prescribed  
5 interval to come into contact with the upper surface of an  
underlayer while partially exposing said underlayer; and

a nitride-based semiconductor layer, formed on the upper surface of said underlayer and said mask layers,  
10 consisting of a material different from that of said  
underlayer, wherein

the minimum distance between adjacent said mask  
layers is smaller than the width of an exposed part of  
said underlayer located between said adjacent mask layers.

15 2. The nitride-based semiconductor element according  
to claim 1, wherein

said underlayer includes a substrate, and

said mask layers are formed to be in contact with the  
upper surface of said substrate.

20

3. The nitride-based semiconductor element according  
to claim 1, further comprising facets, formed on an  
exposed part of the upper surface of said underlayer

25 located between said adjacent mask layers, having at least  
two types of different sizes.

*= N based semiconductor layer?*  
*Figs 1 & 2*

4. The nitride-based semiconductor element according to claim 1, wherein

5 said nitride-based semiconductor layer is formed on the upper surface of said underlayer through a buffer layer.

Fig 4.

5. The nitride-based semiconductor element according to claim 1, wherein

10 said nitride-based semiconductor layer is formed to be in contact with the upper surface of said underlayer.

6. The nitride-based semiconductor element according to claim 1, wherein

15 said mask layers have overhangs protruding above an exposed part of said underlayer.

7. The nitride-based semiconductor element according to claim 6, wherein

20 said mask layers are at least partially inverse-trapezoidal.

\*

8. The nitride-based semiconductor element according to claim 1, wherein

25 said underlayer includes projection portions,

said projection portions are inverse-trapezoidal, and  
said mask layers are formed to be in contact with the  
upper surfaces of said inverse-trapezoidal convex portions.

Figs 12, 13

?

5 9. The nitride-based semiconductor element according  
to claim 1, wherein

said underlayer includes projection portions, and

10 said mask layers are formed to be in contact with the  
upper surfaces of said projection portions so that side  
portions of said mask layers protrude from said projection  
portions.

10. The nitride-based semiconductor element according  
to claim 1, wherein

15 said mask layers include:

a first mask layer formed to be in contact with the  
upper surface of said underlayer, and

20 a second mask layer, formed on said first mask layer,  
consisting of a material harder to etch than said first  
mask layer.

11. The nitride-based semiconductor element according  
to claim 1, further comprising a nitride-based  
semiconductor element layer, formed on said nitride-based  
25 semiconductor layer, having an element region.

12. A method of forming a nitride-based semiconductor comprising steps of:

forming a plurality of mask layers at a prescribed interval to be in contact with the upper surface of an underlayer while partially exposing said underlayer; and

growing a nitride-based semiconductor layer consisting of a material different from that of said underlayer on the upper surface of said underlayer and said mask layers, wherein

the minimum distance between adjacent said mask layers is smaller than the width of an exposed part of said underlayer located between said adjacent mask layers.

13. The method of forming a nitride-based semiconductor according to claim 12, wherein

said step of growing said nitride-based semiconductor layer includes a step of growing said nitride-based semiconductor layer on the upper surface of said underlayer through a buffer layer.

14. The method of forming a nitride-based semiconductor according to claim 12, wherein

said step of growing said nitride-based semiconductor layer includes a step of growing said nitride-based

semiconductor layer to be in contact with the upper surface of said underlayer.

15. The method of forming a nitride-based semiconductor according to claim 12, wherein said mask layers have overhangs protruding above an exposed part of said underlayer.

16. The method of forming a nitride-based semiconductor according to claim 15, wherein said mask layers are at least partially inverse-trapezoidal.

17. The method of forming a nitride-based semiconductor according to claim 12, wherein said underlayer includes a substrate, and said mask layers are formed to be in contact with the upper surface of said substrate.

18. The method of forming a nitride-based semiconductor according to claim 12, wherein said underlayer includes projection portions, said projection portions are inverse-trapezoidal, and said mask layers are formed to be in contact with the upper surfaces of said inverse-trapezoidal projection

portions.

19. The method of forming a nitride-based semiconductor according to claim 12, wherein

5       said underlayer includes projection portions, and  
      said mask layers are formed to be in contact with the upper surfaces of said projection portions so that side portions of said mask layers protrude from said projection portions.

10       20. The method of forming a nitride-based semiconductor according to claim 12, wherein

      said step of forming said mask layers includes steps of:

15       forming a first mask layer to be in contact with the upper surface of said underlayer,

      forming a second mask layer consisting of a material harder to etch than said first mask layer on said first mask layer, and

20       forming an etching mask on a prescribed region of said second mask layer and thereafter etching said second mask layer and said first mask layer through said etching mask serving as a mask thereby forming overhanging mask layers.

25

21. The method of forming a nitride-based semiconductor according to claim 12, further comprising a step of growing a nitride-based semiconductor element layer having an element region on said nitride-based semiconductor layer.

22. A method of forming a nitride-based semiconductor comprising steps of:

forming a plurality of mask layers at a prescribed interval to be in contact with the upper surface of an underlayer while partially exposing said underlayer; and growing a nitride-based semiconductor layer consisting of a material different from that of said underlayer on an exposed part of the upper surface of said underlayer located between adjacent said mask layers to have difference in growth rate.

23. The method of forming a nitride-based semiconductor according to claim 22, wherein

said step of growing said nitride-based semiconductor layer includes a step of growing facets having at least two types of different sizes on said exposed part of the upper surface of said underlayer located between said adjacent mask layers thereby growing said nitride-based semiconductor layer.